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ABSTRACT

The academic achievement of 144 second, third, and fourth graders in two Tucson elementary school bilingual education programs was measured by pre- and post-test scores on the California Achievement Test (CAT) and California Test of Basic Skills-Spanish (CTBS) in the fall and spring of the 1982-83 school year. The study was undertaken to examine whether or not the students gained in achievement during the school year, how students changing from Spanish to English reading and math instruction compared with those initially placed in English instruction, and how gains compared on the two tests. Significant differences were found between fall and spring scores on the CAT reading and math tests in each grade, and in the CTBS in second and third grades. Fourth-grade students receiving instruction in Spanish reading and math showed no gains on the CTBS. However, students changing from Spanish to English instruction in the third grade performed significantly better on the CAT math test. No significant differences were found for fourth grade students changing from Spanish to English. Further research with greater controls was recommended. (MSE)

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OUTCOME EVALUATION OF SELECTED BILINGUAL CLASSROOMS

SUNNYSIDE UNIFIED SCHOOL DISTRICT
TUCSON, ARIZONA
1983-84

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Aug 1983

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This outcome evaluation would not have been possible without the bilingual teachers' invaluable assistance and willingness to particiapte. The teachers and their bilingual classrooms selected for the evaluation were most cooperative and efficient in assuring completion of the pre-post testing format. Numerous technicalities in administration procedures, preparing and planning for adequate testing time with pupils, use of appropriate testing materials and transmittal of materials to the Intercultural Resource Center and Bilingual Education Office in a timely manner were significant tasks that the teachers completed efficiently. The assistance of the instructional aides assigned to the bilingual classrooms also needs to be recognized in their daily contacts with teachers and their students. Last, but not least, the full support, cooperation, and leadership qualities of the two school principals further enabled the successful implementation of the evaluation design. The following professionals made this outcome evaluation a reality:

Mr. Hal Livingston, Principal of Drexel Elementary School
Mr. Gene Barker, Principal of Mission Manor Elementary School
Mrs. Gloria Salas, Second Grade Bilingual Teacher, Drexel School
Mrs. Angie Escandon, Fourth Grade Bilingual Teacher, Drexel School
Mrs. Hilda Fernandez, 2nd Grade Bilingual Aide, Drexel School
Mrs. Marta Armenta, 3rd-4th Grade Bilingual Aide, Drexel School
Mrs. Mary Armijo, Second Grade Bilingual Teacher, Mission Manor School
Miss Dolores Lopez, Third Grade Bilingual Teacher, Mission Manor School
Mrs. Norma Ramirez, Fourth Grade Bilingual Teacher, Mission Manor School
Miss Lina Armijo, Second Grade Bilingual Aide, Mission Manor School

Student's academic achievment as measured by standardized tests was examined through an outcome evaluation. The investigation included 144 students in bilingual classrooms in 2nd, 3rd and 4th grades at Mission Manor and Drexel Elementary Schools, Sunnyside Unified School District in Tucson, Arizona. The CAT (California Achievement Test) and the CTBS-Español (California Test of Basic Skills - Spanish) were administered during the fall and spring of the 1982-83 school year. Pre and post test scores were analyzed with t-tests for dependent and independent means being calculated to determine significant differences in performance. Significant differences were found in gains on the CAT in 2nd, 3rd and 4th grades. Significant differences were found in the CTBS in 2nd and 3rd grades. No significant differences were found in the CTBS outcomes for 4th grade.

The question of student's academic achievement when participating in Bilingual/Bicultural Programs has been a matter of concern to educators and parents of students who are proficient in a language other than English. The issue has become increasingly important since ARS 15-744b was adopted April of 1982 that allows school districts to exempt non-English monolingual or predominantly speakers of a language other than English from mandated standardized testing with the CAT (California Achievement Test) in Arizona. The revised statute requires alternate assessment of achievement on an annual basis for those students exempted. In an effort to determine if the CAT and CTBS (California Test of Basic Skills - Español) can provide adequate outcome information about OLP (Other Language Proficient) students and their academic performance in bilingual classrooms, the Sunnyside School District's Governing Board voted not to exempt pupils the first year of the amendment. In the meantime, careful analysis of the CAT and CTBS scores for students in bilingual classes would continue as a priority for making decisions about the exemptions of students. An evaluation practicum sponsored by Arizona State University's Center for Bilingual Bicultural Education, the Arizona Department of Education's Bilingual Education Unit and the Bilingual Education Service Center offered a unique opportunity to conduct a small scale outcome evaluation. The selection of 2nd, 3rd, and 4th grade levels for the outcome evaluation was based on the need to determine if the testing measures used reflect gains in academic outcomes. Therefore, the purpose of this evaluation is to determine whether gains in student academic performance in Reading and Math on the CAT and CTBS occur during the school year in particular grade levels as measured by the CAT and CTBS-Español standardized tests. The questions to be answered by the evaluation are the following:

1. Do students in bilingual classrooms demonstrate gains on a pre-post test format administration of the CAT and CTBS-Español standardized tests?

2. Do students who have transitioned from Spanish to English Reading and Math instruction attain the same or different gains on the CAT as students initially placed in English reading and math instruction?

3. Do differences in gains occur between students' performance on the CAT and the CTBS?

METHOD

Test Instruments

Students were administered norm referenced measures as follows:

1. The California Achievement Test (CAT) total reading and math subtests (CTB/McGraw-Hill, 1977) Levels 12, 13, and 14 were administered respectively to 2nd, 3rd, and 4th grade students placed in bilingual classrooms and receiving reading and math instruction in English during the pre test. All students in bilingual classrooms were administered the post CAT during the spring.

2. The California Test of Basic Skills - Español (CTBS) total reading and math subtests, (CTB-McGraw-Hill, 1974) Level C to 2nd grade and Level 1 to 3rd and 4th grade students placed in bilingual classrooms and receiving reading and math instruction in Spanish.

The CAT was selected since it has been the state mandated testing measure as well as the issue for exemptions. The CTBS-Español has been administered during the past four years to students receiving reading and math instruction in Spanish. Test scores of both the CAT and CTBS are two elements of criteria required for transition forms and procedures when transferring students from instructional programs in Spanish-English bilingual classrooms to English only classrooms or to English instruction within bilingual classrooms.

Subjects

Students selected for the evaluation were 144 students at Mission Manor and Drexel Elementary Schools in Sunnyside Unified School District during the 1982-83 school year. The attrition of 10 students after the fall semester decreased the sample to 134 as follows: 50 second grade pupils, 44 third grade pupils, and 40 fourth grade pupils. The CAT reading and math tests were administered to 80 students during the pre-test administration in the fall and to 134 students during the post-test administration in the spring. The CTBS was administered to 54 students for the pre and post test format.

Description of the Program

The selection of the particular grade levels and schools was based on the high degree of implementation by the school principals and bilingual classroom teachers of the Bilingual Program Guide which includes steps for: language assessment and placement procedures; the use of L1 for reading and content area instruction; the amount of time spent in L1 and L2 for OLP students' progress through the language arts and ESL continuums. In analyzing the degree of teacher and aide preparation and training, it was found that: 4 of the 6 teachers hold a Bilingual Education Approved Area endorsed teaching certificate and that 3 of the 4 aides have completed High School diploma/GED qualifications. Both schools use bilingual instructional aides for portions of the day and primarily for ESL activities in the grade levels included in the evaluation. Teachers at both schools consistently complete CUES forms to document the mastery of Spanish/English reading skills for all levels of the Santillana and Houghton Mifflin reading series. In addition CUES report forms also include the levels of ESL continuum students have mastered during the year. These report forms are placed in the cumfolders for the following teacher's follow-up and to keep parents informed about the progress of the students.

The transfer to instruction from Spanish to English is based on the acquisition of skills in L1 through instruction in the native language in the Santillana or Economy reading series. In addition, local school district resources and materials are utilized to reinforce skills in reading. The skills in the ESL continuum - Levels A, B, C and Transition Components subsequently lead to the transition of instruction in English rea[illegible] and content areas. For

further details on the description of the Bilingual Program in the Sunnyside School District, please refer to the BILINGUAL PROGRAM GUIDE. The implementation of the bilingual program in the six selected classrooms meet the criteria addressed by Tikunoff (1982) for providing effective bilingual instruction through L1 part of the time and through integration of English language skills (ESL) with regular instruction in the basic skills.

Data Analysis

Raw scores on the two tests were submitted to the Center for Bilingual Bilcultural Education, Arizona State University, for computerized calculations. T-tests for dependent means were calculated for the CAT and CTBS pre and post test scores. T-tests for independent means were calculated with the CAT post test scores to compare the performance of 3rd and 4th grade pupils transitioning to English instruction during the second semester to those 3rd and 4th grade pupils place in English instruction initially. Finally, t-tests for dependent means were calculated with the CAT and CTBS post test scores to determine differences in performance between the English and Spanish instructional groups. A probability level of .05 was applied for the second grade CAT reading t-test; and a probability level of .01 was applied to the remaining CAT and all of the CTBS t-tests.

Results and Discussion

Significant differences were found between the fall and spring gains on the CAT reading and math tests in 2nd, 3rd, and 4th grade. Significant differences were found between the fall and spring gains on the CTBS in 2nd and 3rd grades. No significant differences were found in the 4th grade gains on the CTBS.

The outcome evaluation questions posed previously can be answerd by examining Tables I, II, and III. The data indicates that students in the bilingual classrooms included in the evaluation demonstrated gains in English and Spanish reading and math. However, fourth grade students receiving instruction in Spanish reading and math demonstrated no significant differences on the CTBS tests. No significant differences were found in the performance of 3rd and 4th grade transition students on the CAT reading test. Yet third grade students who transitioned during the second semester from Spanish to English instruction

performed significantly better on the CAT math test. No significant differences were found on the CAT math test for fourth grade transitioned students.

The results of the evaluation indicate that those students participating in the study generally attain gains as measured by standardized, norm-referenced measures. However, discussion of the limitations of this evaluation need to be addressed. A significant weakness of the evaluation is that the sample size of the fourth grade Spanish group and transitioning group is too low. In order to statistically interpret valid results of the t-test for either dependent or independent means, assurances for adequate sample size, preferably more than 20, should have been made. Future outcome evaluations of academic performance of students in bilingual classrooms need to integrate more thorough control of variables such as levels of language proficiency and SES levels which a process evaluation would include as controlled variables. Controversy towards the standardized measures utilized in the evaluation has recently occurred through studies finding the lack of dependency of constructs between the subtest scores of both the CAT and CTBS (Klien, 1980; Powers, Crowder, 1982). The use of criterion-referenced tests could be a viable alternative in addressing the issue of alternate test measures for CLP students; but careful and timely selection or design of these instruments is essential. In the future, outcome evaluation results need to be integrated with process evaluation results as a more effective decision making strategy for establishing goals and objectives and for further refinement and improvement of Bilingual Education Programs.

T A B L E I

ENGLISH INSTRUCTION

C A T				t-Test - Dependent Means			
	N	Mean	Standard Deviation	df	t-crit	t-value	Level of significance
GRADE 2							
Reading							
PRE	27	49.26	15.298	26	±1.706	-2.58	$p < .05$
POST	27	52.96	15.020				
Math							
PRE	27	45.63	10.51	26	±2.479	-5.26	$p < .01$
POST	27	52.37	8.23				
GRADE 3							
Reading							
PRE	22	45.41	12.35	21	±2.518	-5.47	$p < .01$
POST	22	53.18	13.99				
Math							
PRE	22	40.27	13.44	21	±2.518	-11.85	$p < .01$
POST	22	58.73	14.33				
GRADE 4							
Reading							
PRE	31	35.52	9.82	30	±2.457	-5.02	$p < .01$
POST	31	42.52	11.50				
Math							
PRE	31	38.84	12.07	30	±2.457	-5.34	$p < .01$
POST	31	47.77	13.68				

TABLE II

SPANISH INSTRUCTION

C T B S-E S P A Ñ O L				t-Test - Dependent Means			
	N	Mean	Standard Deviation	df	t-crit	t-value	Level of significance
GRADE 2							
Reading							
PRE	23	55.43	12.77	22	±2.508	- 4.95	p<.01
POST	23	61.52	10.67				
Math							
PRE	23	32.04	7.77	22	±2.508	-10.47	p<.01
POST	23	43.13	8.38				
GRADE 3							
Reading							
PRE	22	36.32	9.20	21	±2.518	- 3.56	p<.01
POST	22	42.91	12.59				
Math							
PRE	22	54.09	12.52	21	±2.518	- 5.10	p<.01
POST	22	65.73	11.49				
GRADE 4							
Reading							
PRE	8	42.13	13.65	7	±1.895	- .392	p = NS
POST	8	43.50	18.81				
Math							
PRE	8	65.63	16.24	7	±1.895	- .708	p = NS
POST	8	68.13	12.63				

TABLE III

SPANISH TO ENGLISH INSTRUCTION

CAT-TRANSITION GROUP	N	Mean	Standard Deviation	t-Test - Independent Means df	t-crit	t-value	Level of significance
GRADE 3							
Trans. Group Reading Post	16	48.63	9.84	36	±2.434	.401	p - NS
Eng. Group Reading Post	22	53.18	13.99				
Trans. Group Math Post	16	62.75	9.55	36	±2.434	4.27	p<.01
Eng. Group Math Post	22	58.73	14.33				
GRADE 4							
Trans. Group Reading Post	4	30.75	8.26	33	±2.445	-1.63	p = NS
Eng. Group Reading Post	31	42.52	11.50				
Trans. Group Math Post	4	44.25	7.85	33	±2.445	- .395	p = NS
Eng. Group Math Post	31	47.77	13.68				